

### Abstract

Embodiments in accordance with the present invention encompass photo-imageable compositions that include polymers of acrylate-type monomers and norbornene-type monomers. In some embodiments a catalyst system comprising a cationic or a neutral Pd(II) dimer component having the formula  $(\text{Allyl})\text{Pd}(\text{P}(\text{R}^{21})_3)$  or  $(\text{L}')[(\text{L})\text{Pd}(\text{R})(\text{X})]_2$ , respectively is employed to effect polymerization. In other embodiments a free radical or living free radical catalyst is employed to effect polymerization. At least one of the acrylate-type monomers and norbornene-type monomers of the polymer embodiments of the present invention encompass an acid labile moiety. Some polymer embodiments of the present invention include more than one type of acrylate-type monomer and norbornene-type monomer. Embodiments of the present invention include forming a patterned layer on a substrate and some embodiments include transferring the patterned structure to a material layer first formed on the substrate.